

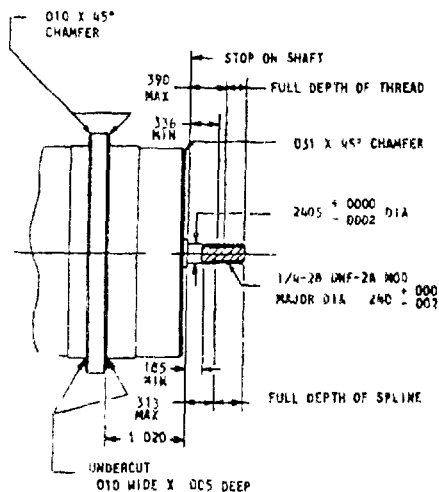
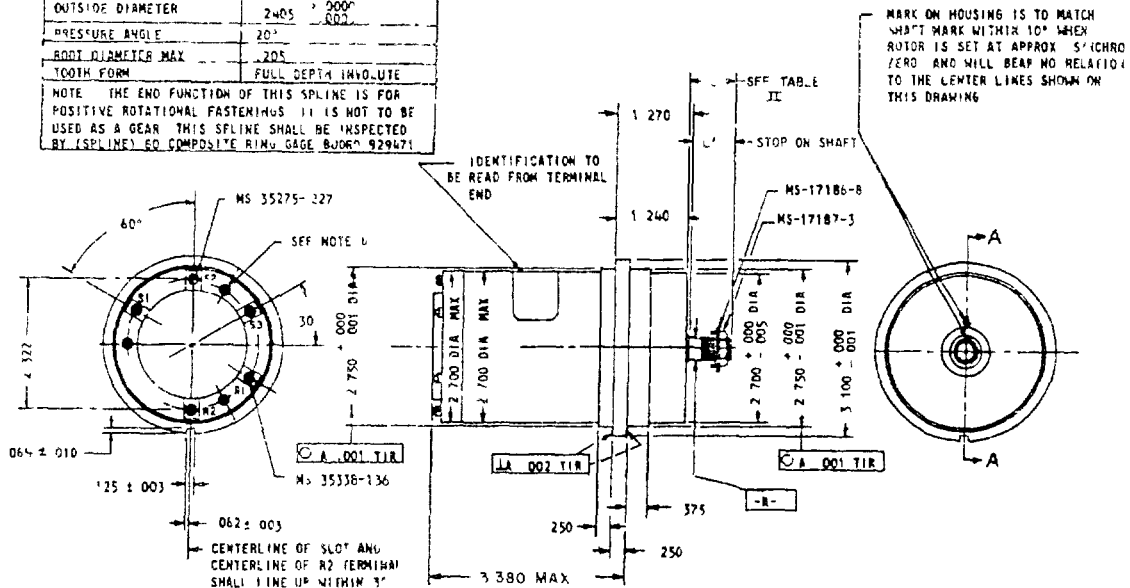
# MILITARY SPECIFICATION SHEET SYNCHRO CONTROL TRANSMITTER, TYPE 31CX6d

This Specification has been Approved by the Ordnance Systems Command, Department of the Navy.  
THE COMPLETE REQUIREMENTS FOR PRODUCING THE SYNCHRO DESCRIBED HEREIN SHALL CONSIST OF THIS DOCUMENT AND THE ISSUE IN EFFECT OF SPECIFICATION MIL-S-20708

SPLINE DATA	
TEETH	22
PITCH	.98
PITCH DIAMETER	2.291 $\pm$ .000 - .002
OUTSIDE DIAMETER	2.405 $\pm$ .000 - .002
PRESSURE ANGLE	20°
ROOT DIAMETER MAX	.205
TOOTH FORM	FULL DEPTH INVOLUTE

NOTE: THE END FUNCTION OF THIS SPLINE IS FOR POSITIVE ROTATIONAL FASTENING. IT IS NOT TO BE USED AS A GEAR. THIS SPLINE SHALL BE INSPECTED BY (SPLINE) GO COMPOSITE RING GAGE 8406 929471

UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN INCHES  
TOLERANCES ON FRACTIONS  $\pm 1/64$   
DECIMALS  $\pm .005$  ANGLES  $\pm 2^\circ$



## NOTES:

- PERPENDICULARITY AND CONCENTRICITY SHALL BE MEASURED WITH THE UNIT IN A VERTICAL POSITION SUPPORTED BY THE SHAFT WHEN THE HOUSING ROTATED.
- RUNOUT OF FEATURE "A" (SMOOTH PORTION) OF SHAFT SHALL NOT EXCEED .0008 TIR.
- END PLAY AND RADIAL PLAY SHALL BE MEASURED DURING THE REVERSAL OF THE FOLLOWING LOADS:  
END PLAY - 1 POUND RADIAL PLAY 1 POUND
- THE TERMINAL BLOCK SHALL BE SECURED BY SCREWS OTHER THAN THE TERMINAL SCREWS. RECESSES SHALL ALLOW TERMINAL LUG MS-25036-6 TO BE INSTALLED WITH THE BARRELS INBOARD OR OUTBOARD AND PREVENT THE LUGS FROM TURNING.
- MINOR VARIATIONS OF UNIT CONFIGURATION ARE PERMITTED FOR UNDIMENSIONED DESIGN DETAIL.
- THE FOLLOWING LIST OF HARDWARE: MS-35275-227 MACHINE SCREW (5 REQUIRED), MS-35336-136 LOCK WASHER (5 REQUIRED), MS-17186-8 DRIVE WASHER (1 REQUIRED), MS-17187-3 NUT (1 REQUIRED) SHALL BE PACKAGED IN A VENTILATED ENVELOPE MADE OF MATERIAL HAVING A PH VALUE OF 6-8 THAT IS COMPATIBLE WITH THE WEIGHT OF THE CONTENTS. THEN THE PACKAGED HARDWARE SHALL BE PLACED IN THE UNIT SYNCHRO PACKAGE. FOR INFORMATION ONLY, SEE SYNCHRO CLAMP MS-17183.
- PENDING ISSUANCE OF A QUALIFIED PRODUCTS LIST (QPL), A SAMPLE OF THE SYNCHROS TO BE FURNISHED UNDER THIS SPECIFICATION SHALL BE SUBJECTED TO THE PREPRODUCTION TESTS AS SPECIFIED IN MIL-S-20708.

FS 5990

SHEET 1 OF 2

PARTIAL SECTION  
A A

MIL-S-20708/139(OS)

TABLE I

<u>Requirements</u>	<u>Value</u>	<u>Unit</u>	<u>Tolerance</u>
Frequency	60	Hz	+1%
Primary Voltage	115	volts	+1%
Primary Current	.191	milliamperes	maximum
Primary Power	2.26	watts	nominal
Impedance:			
Zro	693	ohms	+15%
Zss	63	ohms	nominal
Impedance Angle:			
Zro	83.2	degrees	+2°
Zss	20	degrees	nominal
Transformation Ratio	.783	-----	+2%
Phase Shift	4.4 (rad)	degrees	±.5
D.C. Resistance:			
Rotor (R1-R2)	53.6	ohms	maximum
Stator (line-to-line)	52	ohms	nominal
Electrical Error	8	minutes	maximum
Null Voltages:			
Total	100	millivolts	maximum
Fundamental	30	millivolts	maximum
Friction Torque	0.5	oz-in	maximum
Radial Play	.0008	inches	maximum
End Play	0.0030	inches	±.0020
Temperature Rise	10	degrees (C)	maximum

This unit shall not be subjected to the altitude requirements of MIL-S-20708.

Part Number: M20708/139 plus applicable dash number from Table II.

TABLE II

DASH NO.	SHAFT DIAMETER	SHAFT STYLE	TERMINAL END	L' DIMENSION TO STOP ON SHAFT	L REFERENCE FREE SHAFT LENGTH
*-001	.2405	Splined	Terminal Board	.700 ± .010	.730 ± .010

\*Dash number -001 shall be the NATO Standard.

Custodians:	Review Activities	User Activities	Preparing Activity:
Navy-AS	Navy-SH,OS	Marine Corp. MC	Navy-OS
		U.S. Coast Guard-CG	Project No. 5990-N-043

# SPECIFICATION ANALYSIS SHEET

Form Approved  
Budget Bureau No. 119-R004

## INSTRUCTIONS

This sheet is to be filled out by personnel either Government or contractor, involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side staple in corner, and send to preparing activity (as indicated on reverse hereof).

## SPECIFICATION

MIL-3-20708/139(OS) SYNCHRO CONTROL TRANSMITTER, TYPE 31CX6a

ORGANIZATION (of submitter)

CITY AND STATE

CONTRACT NO.

QUANTITY OF ITEMS PROCURED

DOLLAR AMOUNT

\$

## MATERIAL PROCURED UNDER A

☐

DIRECT GOVERNMENT CONTRACT

☐

SUBCONTRACT

1. HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?

See PARAGRAPH, N° 430 AND WORKING

2. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES.

2. COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID

3. IS THE SPECIFICATION RESTRICTIVE?

☐

YES

☐

NO

IF YES IN WHAT WAY?

4. REMARKS (Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity.)

SUBMITTED BY (Printed or typed name and activity)

DATE

FOLD

DEPARTMENT OF THE NAVY

Naval Ordnance Systems Command  
Washington, D.C. 20360

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WASHINGTON, D. C. 20360

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NOTICE OF  
VALIDATION

INCH POUND

MIL-S-20708/139(OS)

NOTICE 1

9 December 1982

MILITARY SPECIFICATION SHEET

SYNCHRO CONTROL TRANSMITTER, TYPE 31CX6A

MIL-S-20708/139(OS), dated 3 March 1969, with Amendment 1 dated 26 September 1975, has been reviewed and determined to be valid for use in acquisition

Preparing activity:  
Navy - OS

AMSC N/A

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

FSC 5990

INCH-POUND

MIL-S-20708/139(NAVY)  
AMENDMENT 2  
9 September 1992  
SUPERSEDING  
AMENDMENT 1  
25 September 1975

MILITARY SPECIFICATION SHEET

SYNCHRO, CONTROL TRANSMITTER, TYPE 31CX6A

This amendment forms a part of MIL-S-20708/139(NAVY), dated 3 March 1969, and is approved for use by the Department of the Navy and is available for use by all Departments and Agencies of the Department of Defense.

PAGE 1, Change 1

Delete the preamble in its entirety and substitute the following:

"This specification sheet is approved for use by the Department of the Navy and is available for use by all Departments and Agencies of the Department of Defense."

PAGE 1, Change 2

Add the following as the second sentence to the paragraph above the table: "When this Synchro is not qualified for listing on the applicable Qualified Products List at the time set for opening of bids, acquisition documents must specify that first article testing is required in lieu of qualification."

MIL S 20708/139(NAVY)

PAGE 1, Change 3

Outline drawing, flange diameter designation 3 100 (+ 000 - 001) Delete the tolerance "(+ .000 - 001)" and substitute the tolerance "(+ 000 - .005)."

PAGE 2

Table I Change the "tolerance" values for the requirements "DC Resistance Rotor/Stator" as follows" For the rotor (R1-R2), delete the tolerance "maximum" and substitute the word "reference." For stator (line-to-line), delete the tolerance "nominal" and substitute the word "reference "

Custodians:  
Navy - OS

Preparing activity:  
Navy - OS  
(Project 5990-N411)

Review activities  
Navy - SH, AS

User activities.  
Navy - MC, CG